

**The Effect of a Metal-Oxide Coating on the
Cycling Behavior at 55°C
in Orthorhombic LiMnO₂ Cathode Materials**

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The structural stability of metal-oxide-coated orthorhombic LiMnO₂ (*o*-LiMnO₂) was characterized by its 55°C-cycling behavior. Sol-gel coating of the metal oxides (Al₂O₃ and CoO), followed by heat-treatment at 400°C, leads to the formation of the solid-solution layer (LiMn_{1-x}M_xO₂) with a concentration gradient of metal atoms at the particle surface. The specific capacity and cycle life at 55°C are influenced significantly by the metal-oxide coating. CoO-coated LiMnO₂ exhibits an additional voltage plateau at the deep discharge (2 V), and has a higher capacity than Al₂O₃-coated electrode, although the capacity retention is inferior to the Al₂O₃-coated cathode (Fig. 1).

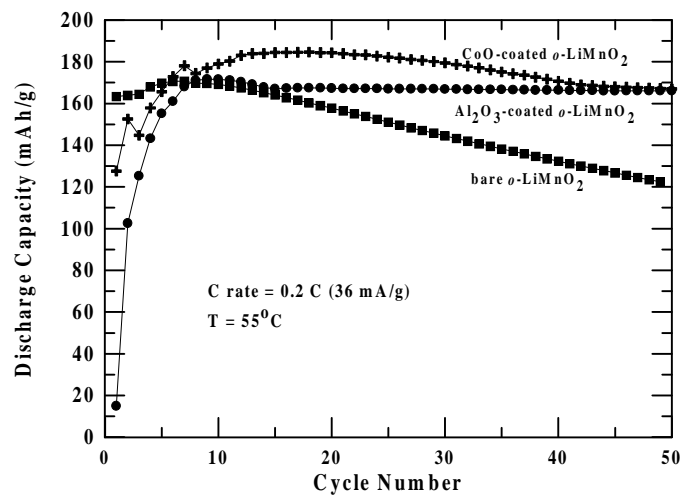


Fig. 1. Plots of the discharge capacity vs. cycle number in bare, CoO-coated, and Al₂O₃-coated LiMnO₂ electrodes at the rate of 0.2 C (= 36 mA/g) between 4.5 and 2 V at 55°C.